REMARKS

The present application was filed on November 16, 2001, as a divisional of parent application Serial No. 08/923,301, which was filed September 4, 1997 and issued March 19, 2002 as U.S. Patent No. 6,359,899. The present application was originally filed with claims 1-28, and claims 13, 14, 27 and 28 were canceled in a transmittal letter filed with the present application. Claims 1-12 and 15-26 are pending in the present application.

In this Preliminary Amendment, Applicants have amended the specification and claims 1-12, 15 and 17-26. No new matter has been added.

Attached hereto is a marked-up version of the changes made to the specification and claims by the present Amendment.

Applicants believe that claims 1-12 and 15-26 as amended are in condition for allowance, and such favorable action is earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The paragraph beginning on page 2, line 16, has been amended as follows:

Preferred embodiments of the invention include a mechanism for enforcing the time separation between the various chains and also include a mechanism for enforcing a predetermined maximum number of stations that each chain can have, in order to allow non-real-time stations to obtain timely access to the medium. Moreover, preferred embodiments account for the fact that the time separation between any two of the chains, even if initially set at an amount which does provide for timely access for non-real-time stations, is subject to change over time due to such factors as stations becoming active and inactive and, in the case of non-pre-emptive systems, due further to the fact that the initiation of the access to the medium by a particular chain may be delayed by the presence of a non-real-time data transmission. In particular, preferred embodiments include mechanisms providing what we call "list maintenance," this involving such actions as joining, or consolidating, chains when their time separation is less than a specified value (as long as the resulting chain does not exceed the above-mentioned length limit), and otherwise increasing to an acceptable value the separation of chains which are close together and not candidates for being joined. List maintenance also includes such actions as a) maintaining the various chains as near as possible to the aforementioned maximum size and b) recovering robustly from non-anticipated interruptions, as taught in our co-pending U.S. patent application serial number [08/___,___] 08/923,302 filed of even date herewith.

The paragraph beginning on page 6, line 10, has been amended as follows:

Since [read-time] real-time station RT1 was waiting longer, its blackburst interval is longer than that of RT2. Hence a point in time will be reached at which only RT1 is transmitting a blackburst signal. In particular, real-time station RT1's blackburst transmission ended at time t_{21}, while real-time station RT2's blackburst transmission continued beyond that point. Upon observing,

at time t_{22} that it alone was transmitting a blackburst signal, real-time station RT1 stops its blackburst transmission and continues with the rest of its frame.

The paragraph beginning on page 6, line 20, has been amended as follows:

The overall effect of having the real-time stations transmit a fixed length preamble 21 as part of the blackburst signal is to ensure that all non-real-time stations would have ceased transmission and gone into a backoff mode. To this end, the duration of preamble 21 is equal to the sum of a) the aforementioned round-trip propagation delay on the medium, 2τ, and b) the duration of the conventional Ethernet jam signal. Priority will thus have been secured for real-time transmissions without suffering the disruptive effects of a pre-emptive approach. Moreover, as among the real-time stations, the use of the blackburst mechanism ensures that when (as in this embodiment) the duration of the blackburst signal is proportional to the length of time each station has been waiting since it became ready to transmit, the real-time station that was the first to become ready to transmit will be the first to obtain access to the medium. Further description of the use of blackburst signals is found in our co-pending United States patent application serial no. 08/792327 filed 03/08/1996 and entitled: "A Wireless Lan Distributed Access Procedure Providing Priority For Voice Transmissions."

The paragraph beginning on page 11, line 16, has been amended as follows:

In particular, FIG. 6 shows the signals appearing on the medium over a number of access periods P1 through P6, all of duration t_{access}, which occur in the order named but may be separated by other intervening access periods not shown. Each of the transmitted entities is an independent chain marked with a letter and a number, the letter identifying the chain and the number indicating its current length, i.e., the number of stations comprising the chain. Thus, for example, the notation A-3 means that chain A currently comprises three real-time stations. In a first access period, P1, the chains on the network are chains A-3, B-2 and C-2. Each of these chains is separated by some amount of time, the term "separation" being used in the present context to mean the time interval between the end of one chain and the beginning of the subsequent chain. Moreover, it is assumed

that those separations remain unchanged in period P2. The separation between chains A-3 and B-2 at this time is denoted t_{i1}.

IN THE CLAIMS

Claims 1-12, 15 and 17-26 have been amended as follows:

1. (Amended) A contention-based communications network in which multiple linked-list chains of data packets transmitted by communications stations supported by said network at a particular point in time are not always thereafter joined into a single linked-list chain.

2. (Amended) A contention-based communications network in which first and second independent linked-list chains of data packets transmitted by communications stations, once formed, are allowed to continue to exist independently for an indeterminate amount of time.

3. (Amended) The invention of claim 2 wherein said communications network includes a communications medium and wherein the communications stations transmitting the data packets of said first and second independent linked-list chains repetitively access said medium.

4. (Amended) The invention of claim 3 wherein said first and second [ones of said] independent linked-list chains of data packets [communications stations] are joined into a single linked-list chain only if the separation between them becomes less than a particular amount.

5. (Amended) The invention of claim 3 wherein if the separation between said first and second [ones of said multiple] independent linked-list chains becomes less than a particular amount, the separation between said first and second [ones of said multiple] independent linked-list chains [in subsequent ones of said access periods] is caused to be increased.

6. (Amended) The invention of claim 3 wherein said first and second [ones of said multiple] independent linked-list chains are joined into a single linked-list chain on at least certain occasions when a) the separation between them becomes less than a first particular amount and, in addition,

b) the number of [communications stations] data packets in said first and second [ones of said multiple] independent linked-list chains is not, in total, greater than a prescribed maximum.

7. (Amended) The invention of claim [3] 6 wherein if a) the separation between said first and second [ones of said multiple] independent linked-list chains becomes less than a second particular amount but b) the number of [communications stations] data packets in said first and second [ones of said multiple] independent linked-list chains is greater, in total, than said prescribed maximum, the separation between said first and second [ones of said multiple] independent linked-list chains [in subsequent ones of said access periods] is caused to be increased.

8. (Amended) The combination of a plurality of communications stations and a communications medium, each one of said stations being adapted to access said communications medium only when that station perceives said medium to be idle, at least ones of said stations being adapted to arrange [themselves] transmitted data packets into [at least first and second] a plurality of chains, each of the stations transmitting data packets in [of] each particular chain being further adapted to access said communications medium one after the other in such a way as to preclude any of said plurality of stations which are not transmitting data packets in said particular chain from perceiving said medium to be idle until each of the stations transmitting data packets in [of] said particular chain has accessed said communications medium, the stations transmitting data packets in [of] said [first and second] plurality of chains repetitively accessing said communications medium over a succession of access periods, and said [first and second] plurality of chains of data packets being separated within each of said succession of access periods by at least a particular time interval.

9. (Amended) The invention of claim 8 wherein first and second ones of said [linked-list] chains of [communications stations] data packets are joined into a single [linked-list] chain only if the separation between them becomes less than a particular amount.

10. (Amended) The invention of claim 8 wherein if the separation between [said] first and second ones of said [multiple linked-list] plurality of chains becomes less than a particular amount,

the separation between said first and second ones of said [multiple linked-list] chains [in subsequent ones of said access periods] is caused to be increased.

11. (Amended) The invention of claim 8 wherein first and second ones of said [multiple linked-list] plurality of chains are joined into a single [linked-list] chain if a) the separation between them becomes less than a first particular amount and, in addition, b) the number of [communications stations] data packets in said first and second ones of said [multiple linked-list] chains is not, in total, greater than a prescribed maximum.

12. (Amended) The invention of claim [8] 11 wherein if a) the separation between said first and second ones of said [multiple linked-list] chains becomes less than a second particular amount but b) the number of [communications stations] data packets in said first and second [ones of said multiple linked-list] chains is, in total, greater than said prescribed maximum, the separation between said first and second ones of said [multiple linked-list] chains in subsequent ones of said access periods is caused to be increased.

15. (Amended) A method comprising the step of forming multiple linked-list chains of data packets transmitted by communications stations in a contention-based communications network, said method characterized in that said multiple linked-list chains, after having been formed, are not always thereafter joined into a single linked-list chain.

17. (Amended) The invention of claim 16 wherein said communications network includes a communications medium and wherein the communications stations transmitting the data packets [of said first and second chains] repetitively access said medium.

18. (Amended) The invention of claim 17 wherein first and second ones of said linked-list chains of [communications stations] data packets are joined into a single linked-list chain only if the separation between them becomes less than a particular amount.

19. (Amended) The invention of claim 17 wherein if the separation between [said] first and second ones of said multiple linked-list chains becomes less than a particular amount, the separation between said first and second ones of said multiple linked-list chains [in subsequent ones of said access periods] is caused to be increased.

20. (Amended) The invention of claim 17 wherein first and second ones of said multiple linked-list chains are joined into a single linked-list chain on at least certain occasions when a) the separation between them becomes less than a first particular amount and, in addition, b) the number of [communications stations] data packets in said first and second ones of said multiple linked-list chains is not, in total, greater than a prescribed maximum.

21. (Amended) The invention of claim [17] 20 where if a) the separation between said first and second ones of said multiple linked-list chains becomes less than a second particular amount but b) the number of [communications stations] data packets in said first and second ones of said multiple linked-list chains is greater, in total, than said prescribed maximum, the separation between said first and second ones of said multiple linked-list chains [in subsequent ones of said access periods] is caused to be increased.

22. (Amended) A method for use in a network comprising a plurality of communications stations and a communications medium, each one of said stations being adapted to access said communications medium only when that station perceives said medium to be idle, at least ones of said stations being adapted to arrange [themselves] transmitted data packets into [at least first and second] a plurality of chains, each of the stations transmitting data packets into a [of each] particular chain being further adapted to access said communications medium one after the other in such a way as to preclude any of said plurality of stations which are not transmitting data packets into [in] said particular chain from perceiving said medium to be idle until each of the stations transmitting data packets into [of] said particular chain has accessed said communications medium,

the method comprising the step [wherein] of:

the stations which are transmitting data packets into [of] said [first and second] plurality of chains repetitively accessing said communications medium over a succession of access periods, said

[first and second] plurality of chains being separated within each of said succession of access periods by at least a particular time interval.

23. (Amended) The invention of claim 22 wherein first and second ones of said [linked-list] plurality of chains of [communications stations] data packets are joined into a single [linked-list] chain only if the separation between them becomes less than a particular amount.

24. (Amended) The invention of claim 22 wherein if the separation between said first and second ones of said [multiple linked-list] plurality of chains becomes less than a particular amount, the separation between said first and second ones of said [multiple linked-list] chains [in subsequent ones of said access periods] is caused to be increased.

25. (Amended) The invention of claim 22 wherein first and second ones of said [multiple linked-list] plurality of chains are joined into a single [linked-list] chain if a) the separation between them becomes less than a first particular amount and, in addition, b) the number of [communications stations] data packets in said first and second ones of said [multiple linked-list] chains is not, in total, greater than a prescribed maximum.

26. (Amended) The invention of claim [22] 25 wherein if a) the separation between said first and second ones of said [multiple linked-list] chains becomes less than a second particular amount but b) the number of [communications stations] data packets in said first and second ones of said [multiple linked-list] chains is, in total, greater than said prescribed maximum, the separation between said first and second ones of said [multiple linked-list] chains [in subsequent ones of said access periods] is caused to be increased.